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A558
JACC March 17, 2015
Volume 65, Issue 10S

Congenital Heart Disease

ACUTE KIDNEY INJURY FOLLOWING INFANT CARDIAC SURGERY: INCIDENCE AND PREDICTIVE FACTORS

Poster Contributions
Poster Hall B1
Sunday, March 15, 2015, 3:45 p.m.-4:30 p.m.

Session Title: Pediatric Surgery
Abstract Category: 11. Congenital Heart Disease: Pediatric
Presentation Number: 1222-328

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Background: Infants undergoing repair of congenital heart disease (CHD) are at risk for post-operative acute kidney injury (AKI), but the incidence and outcome of AKI in this population is unknown. Furthermore, it is unknown whether AKI can be predicted from pre- and post-operative data. This study aimed to identify AKI's incidence and outcome following infant CHD repair and determine predictive factors that could guide therapeutic interventions.

Methods: This prospective, observational study in a pediatric cardiac ICU analyzed pre- and post-operative data in infants (< 12 months) undergoing cardiac surgery to determine the incidence and outcome of AKI (AKI Network Stage 3, or AKIN-3). Univariable analyses determined AKI's association with an extensive list of pre-operative, operative, and post-operative patient factors. Receiver operator characteristic area under the curve (AUC) assessed associated factors' discriminatory ability.

Results: In 279 infants enrolled, the cumulative incidence of AKI was 0.22. Regarding pre-operative anatomic and demographic factors, AKI patients were more likely to be age < 30 days (p=.02). Associated operative and post-operative factors were minimum arterial pressure (p=.0005), maximum vasoactive inotrope score (p=.03), decreasing serum pH (p=.02), lower initial bicarbonate (p=.02), maximum serum lactate (p=.01), and emergent extracorporeal membrane oxygenation (p=.01). No factor had an AUC >.67 implying overall poor discriminant ability to predict AKI from pre- and post-operative data. AKI was associated with hospital death; 6/59 patients with AKI died compared to 7/220 non-AKI patients (odds ratio 3.43, p=.04).

Conclusion: AKIN-3 grade AKI is common in infants following repair of CHD and associated with an increased risk of death. Unfortunately, the ability to predict AKI from pre- or early post-operative data is poor limiting clinician ability to tailor care toward preventing AKI.